Global Hydrology Resource Center - A NASA Distributed Active Archive Center

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http://ghrc.nsstc.nasa.gov

2016 GHRC User Working Group Meeting

Sept 20-21, 2016

NASA

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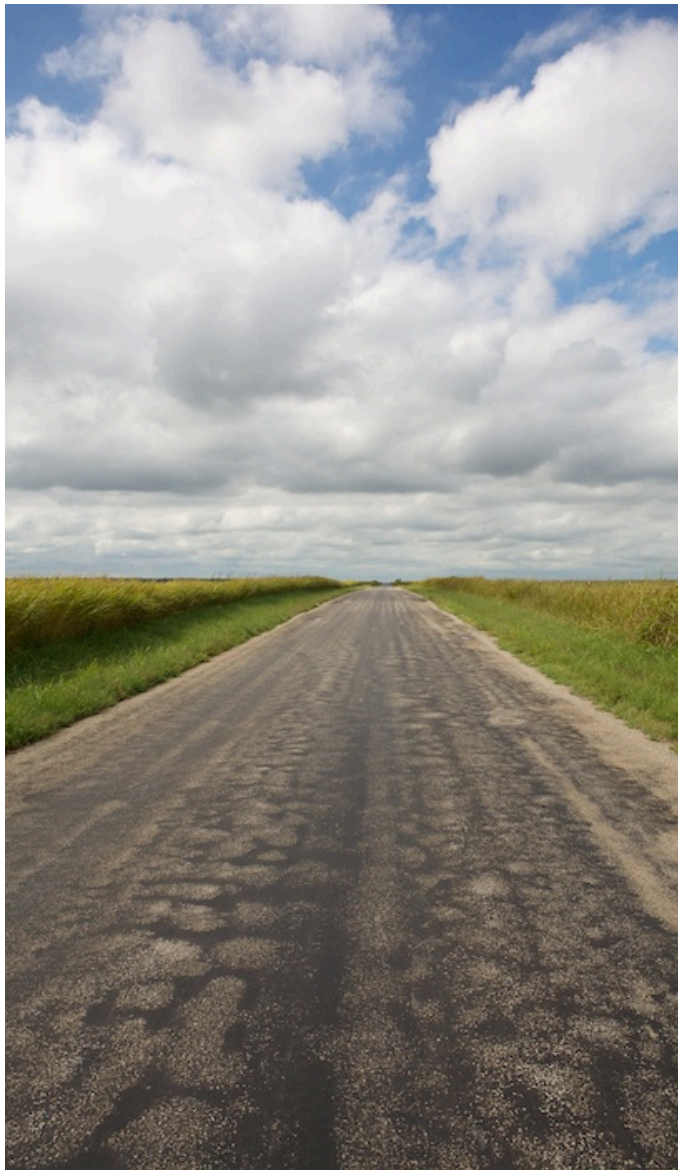
INFORMATION TECHNOLOGY AND SYSTEMS CENTER

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

Vision Statement

GHRC subscribes to the NASA ESDS Vision:

Make NASA's free and open earth science data interactive, interoperable and accessible for research and societal benefit today and tomorrow.



Mission Statement

- To provide a comprehensive active archive of both data and knowledge augmentation services with a focus on *hazardous weather, its governing dynamical and physical processes, and associated applications*.

- Within this broad mandate, GHRC will focus on *lightning, tropical cyclones and storm-induced hazards* through integrated collections of satellite, airborne, and in-situ data sets.

http://ghrc.nsstc.nasa.gov/

Science Outreach Team Formed

- Team Composition
  - Individuals who can straddle GHRC operations and science research projects
    - Need to build or continue to develop their research expertise

- Objectives
  - Build relationships with GHRC's science community
    - Attend, present at science team meetings, conferences, etc.
  - Improve data discovery, access and usability
    - Metadata improvements, documentation, etc.

Process Improvements

- Use well defined process for Data stewardship and Data publication
  - Data Management Process (Data Life Cycle) Website
    - https://ghrc.nsstc.nasa.gov/home/ghrc-docs/data-management
  - Data from cradle to grave
  - *Key recommendation from our UWG meeting!*

- Automate data publication process to minimize redundant and wasted effort
  - Adoption of Data Publication Tool from ORNL DAAC

Data Sets

- Key Additions
  - Tropical Cyclone Precipitation Feature Database (Haiyan Jiang)
  - LIS 0.1 Degree Very High Resolution Gridded Lightning Monthly Climatology (VHRMC) (Rachel Albrecht et al.)
  - Hurricane and Severe Storm Sentinel (HS3) (All airborne instrument data except S-HIS)
  - GPM-Ground Validation (~20 Datasets)
- Upcoming
  - ISS LIS (November Launch?)
- Under discussion
  - Tropical Cyclone Information System (TCIS) – (Svetla Hristova-Valeva JPL, PO.DAAC)
  - Surface Water Ocean Topography (SWOT) Hydrology Data Products – (Collaboration with PO.DAAC)

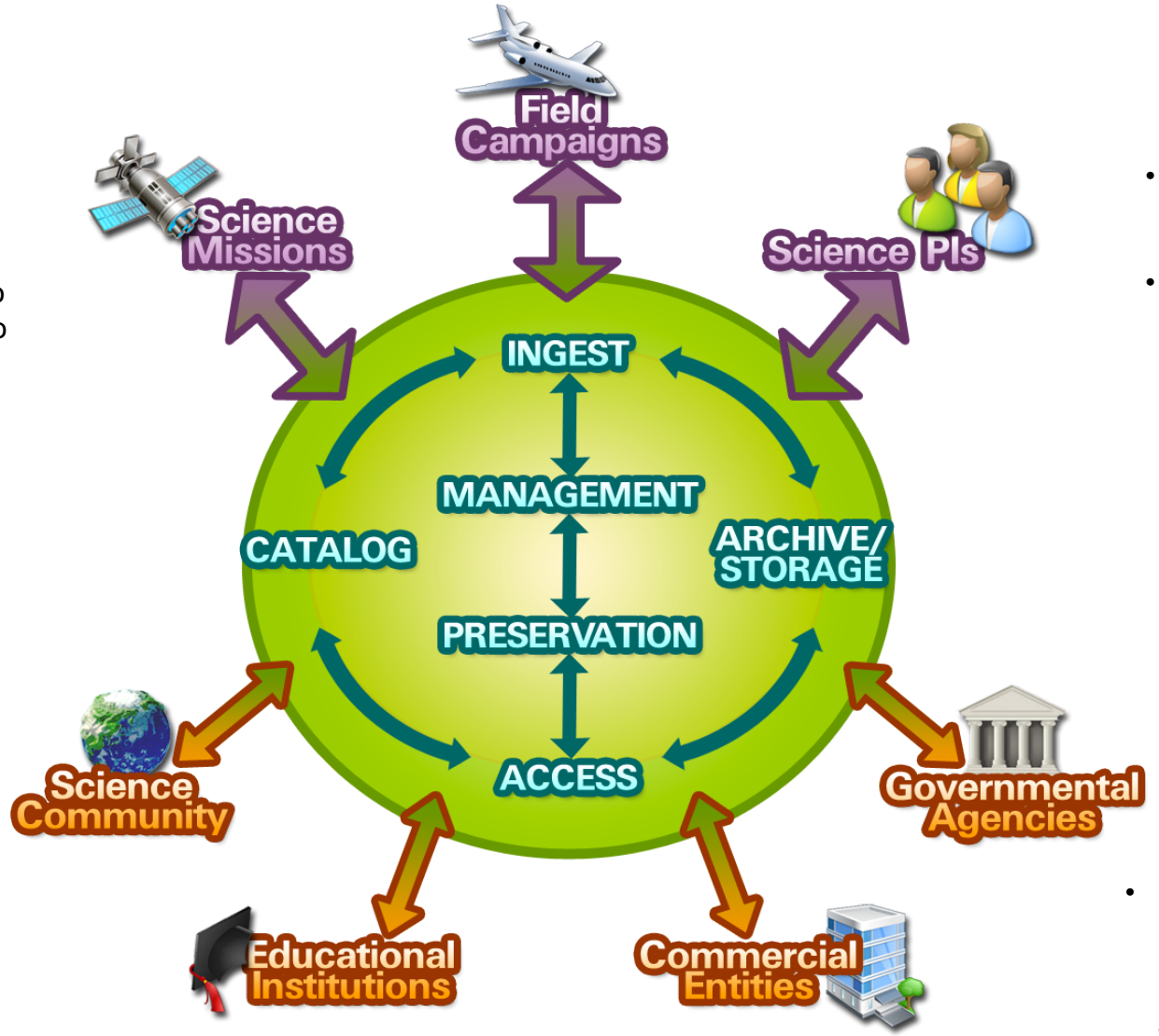
Data Stewardship Services

DOCUMENTATION

- Work with Science Teams to gather not only data but also **all relevant information including documents, papers**
- Ensure that the data is **discoverable**, **accessible** and "**independently understandable**" to all stakeholders without requiring experts

STANDARDS/BEST PRACTICES

- Ensure data is **usable/interoperable** by tools



SCIENCE DATA PROCESSING

- Process data using **science algorithms to generate standard products**
- Translate data into standard formats, and generate browse imagery

ARCHIVE AND PRESERVATION

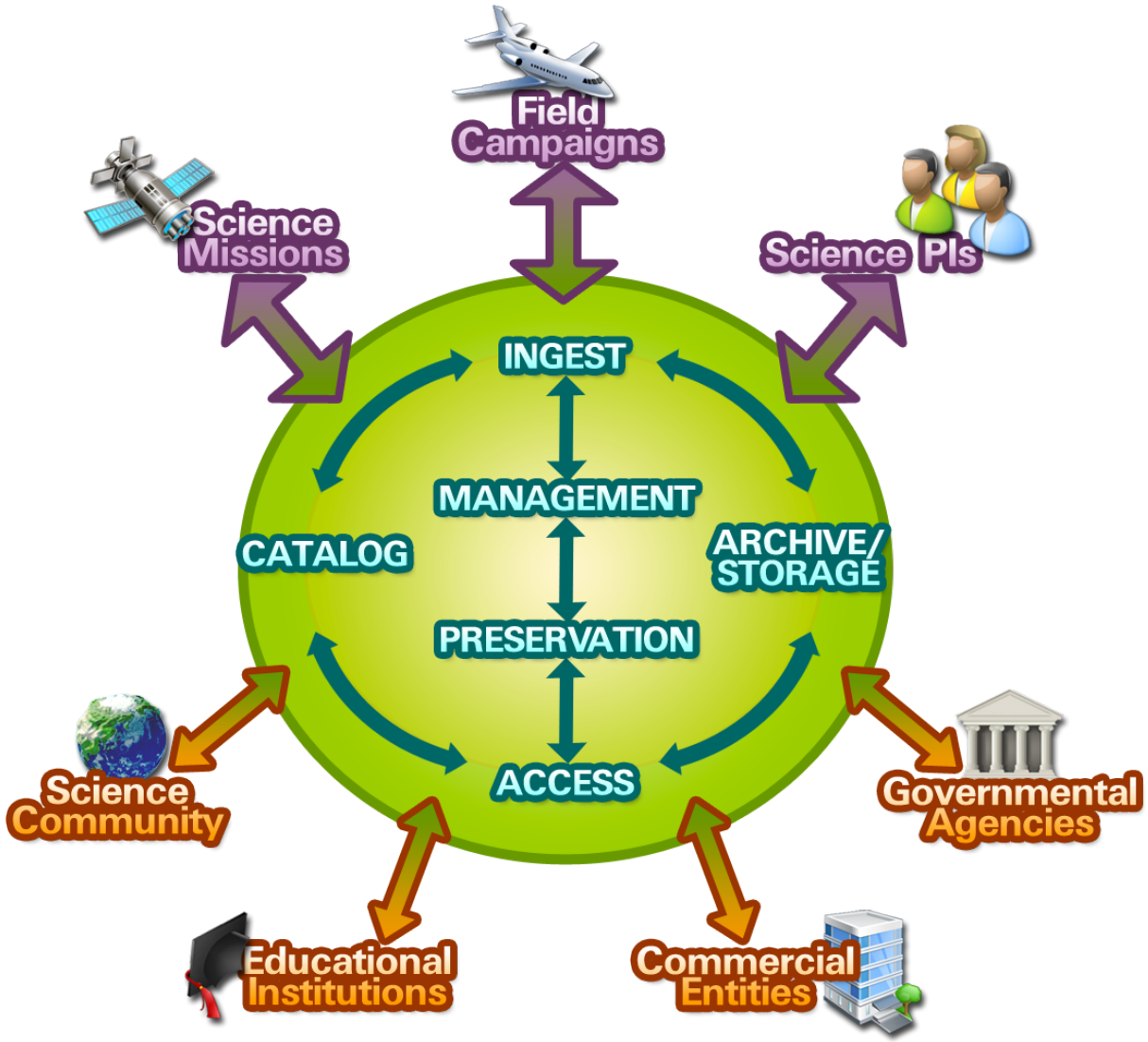
- Follow **documented policies** and **engineered** procedures at every step to insure data and information preservation against all reasonable contingencies

PROVENANCE

- Make the preserved data/information available to all our stakeholder communities with **traceability** to support authenticity

Serves as NASA's Earth science data stewards for scientific, educational, commercial and governmental communities, with a focus on event/episodic data

Data Stewardship Services



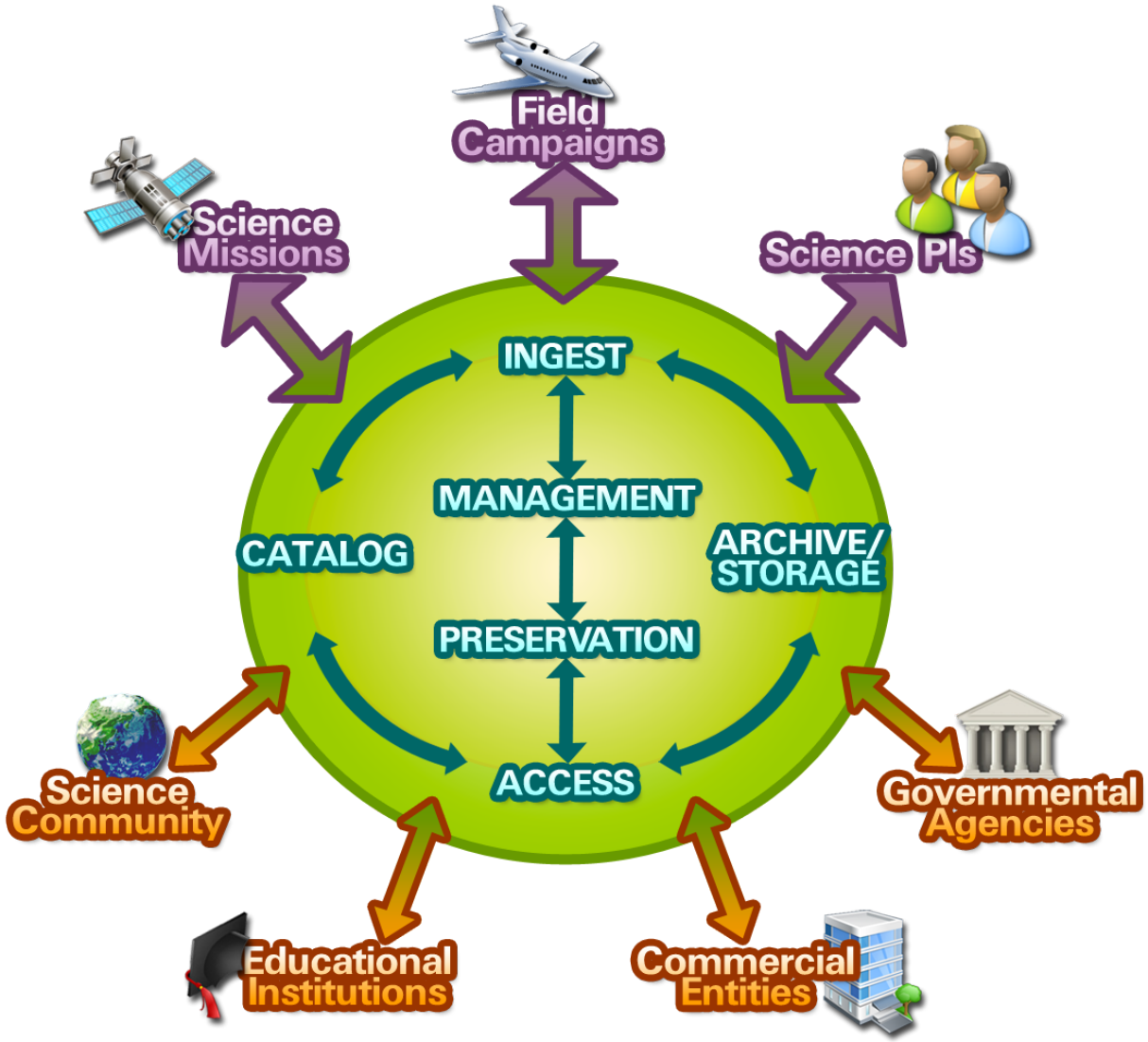
INFRASTRUCTURE IMPROVEMENTS

- New architecture to allow flexibility and easy additions of new tools
- Upgrading components, technology

PRESENTATIONS

- New System Architecture (*Manil Maskey*)
- Data Publication Workflow Tools (*Deb Smith*)

Data Stewardship Services



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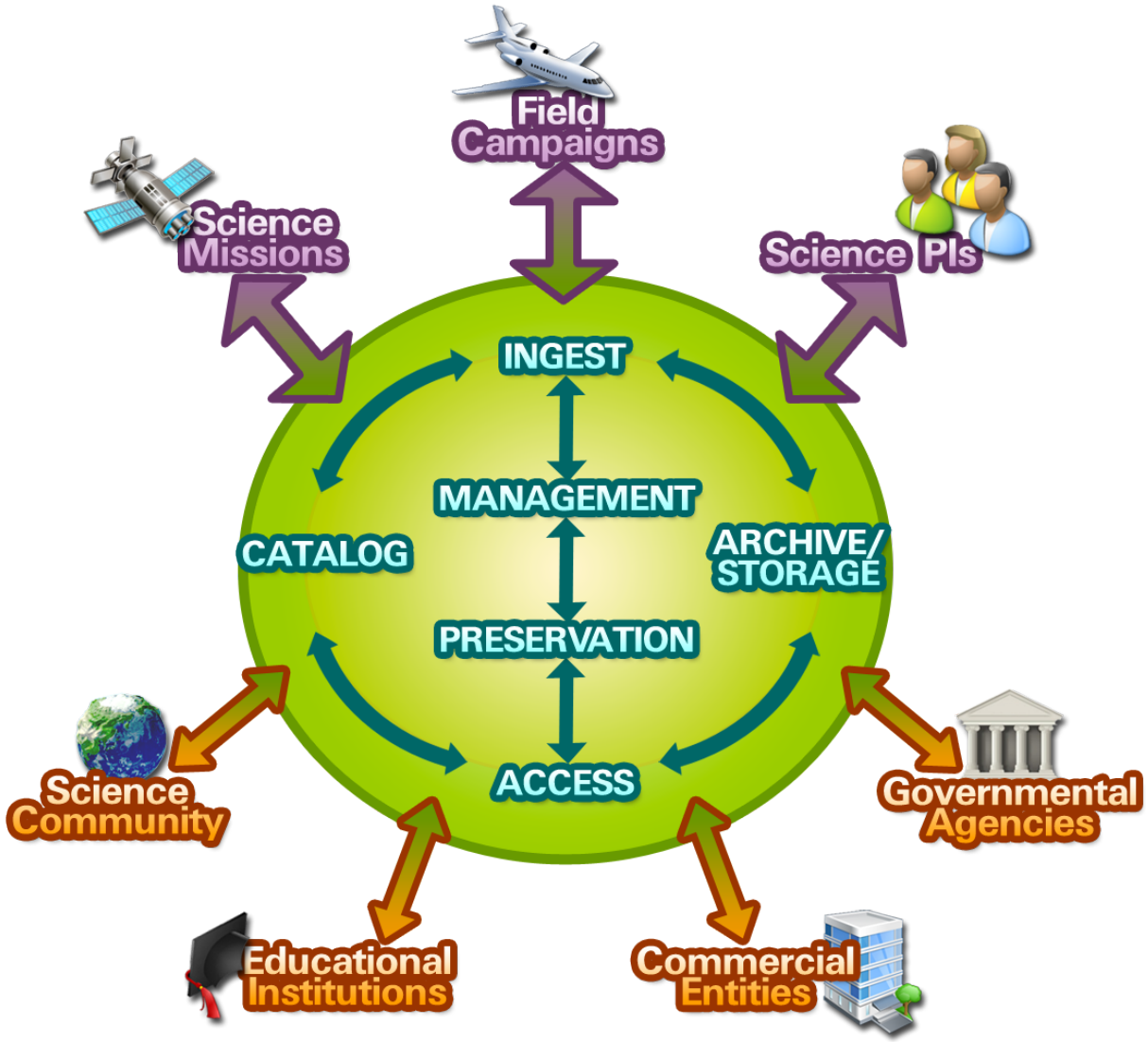
STANDARDS-BASED DATA ACCESS

- BEDI Project - 51 GHRC Datasets made OPeNDAP accessible
- Allows users to build tools/libraries

Data Stewardship Services



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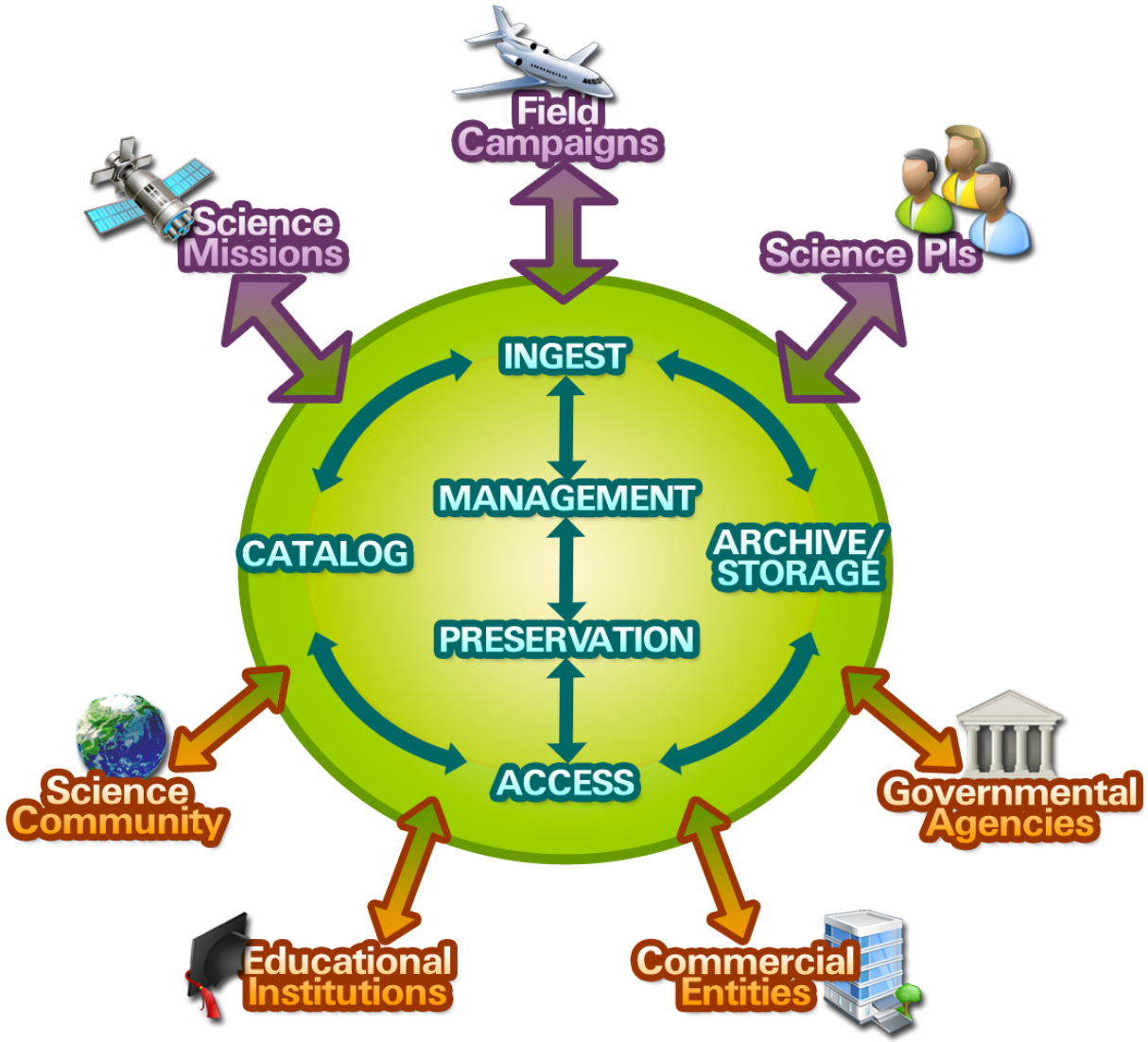
METADATA IMPROVEMENTS

- ARC Project - Metadata corrections/improvements across all DAACs
- GHRC -78% reviewed, 14% fixed

Data Stewardship Services



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AMSR SIPS

- Will generate AMSR-U products (*Sherry Harrison*)
- Generates LANCE Near Real-Time (NRT) AMSR2
- Full Suite of NRT AMSR2 products are available in LANCE (RainOcean, Snow, Sea Ice (6km, 12km, 25km), Land

Knowledge Augmentation Services

DATA & SCIENCE EXPERTISE

CURATED INFORMATION COLLECTIONS

- **Create a knowledge base** for our stake holder communities
- Provide ***data-centric*** **micro articles** covering different topics such as how to use the data, relevant datasets for studying a phenomena, instrument details, cornerstone publication in a research area and interesting events

CURATED DATA COLLECTIONS

- Provide **Virtual Collections** for **Events of Interest**

Provides knowledge augmentation services for its data sets to serve stakeholder's needs

TOOLS EXPERTISE

DATA DISCOVERY

- Provide tools that allow users to **discover data and related information**

DATA ACCESS

- Provide **multiple methods to access** the data

DATA EXPLORATION

- Provide tools to **visualize and analyze** the data

DATA USE

- Provide **data recipes/code snippets** to allow user to use the data

SCIENCE PORTALS

- Provide **customized portals** for managing **field campaigns** and collecting data

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PRESENTATIONS

- Microarticles – provide context and improve data usability (*Kaylin Bugbee*)
- Virtual Collections –direct access to subsets of data (*Kaylin Bugbee*)

Knowledge Augmentation Services

PRESENTATIONS

- Data Discovery
  - Hydro 2.0 (*Leigh Sinclair*)
    Faceted search, improved performance
- Data Access
  - pyCMR (*Manil Maskey*)
    Programmatically search and access data
- Data Exploration
  - FCx (*Amanda Weigel*)
    Visualize explore Field Campaign data
- Data Use
  - Python Lib, iPython Notebook (*Manil Maskey*)
  - Data Recipes (*Amanda Weigel*)

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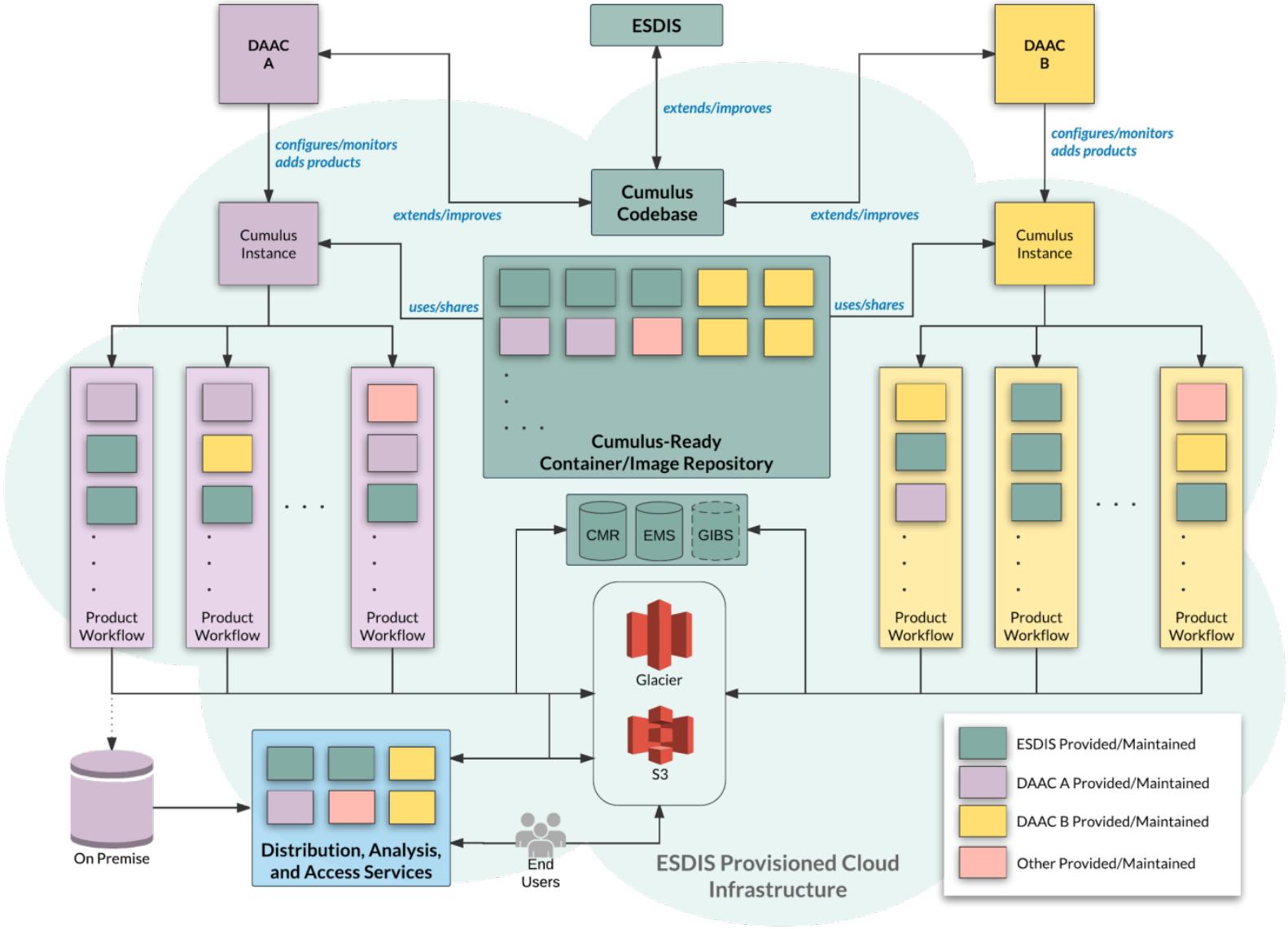
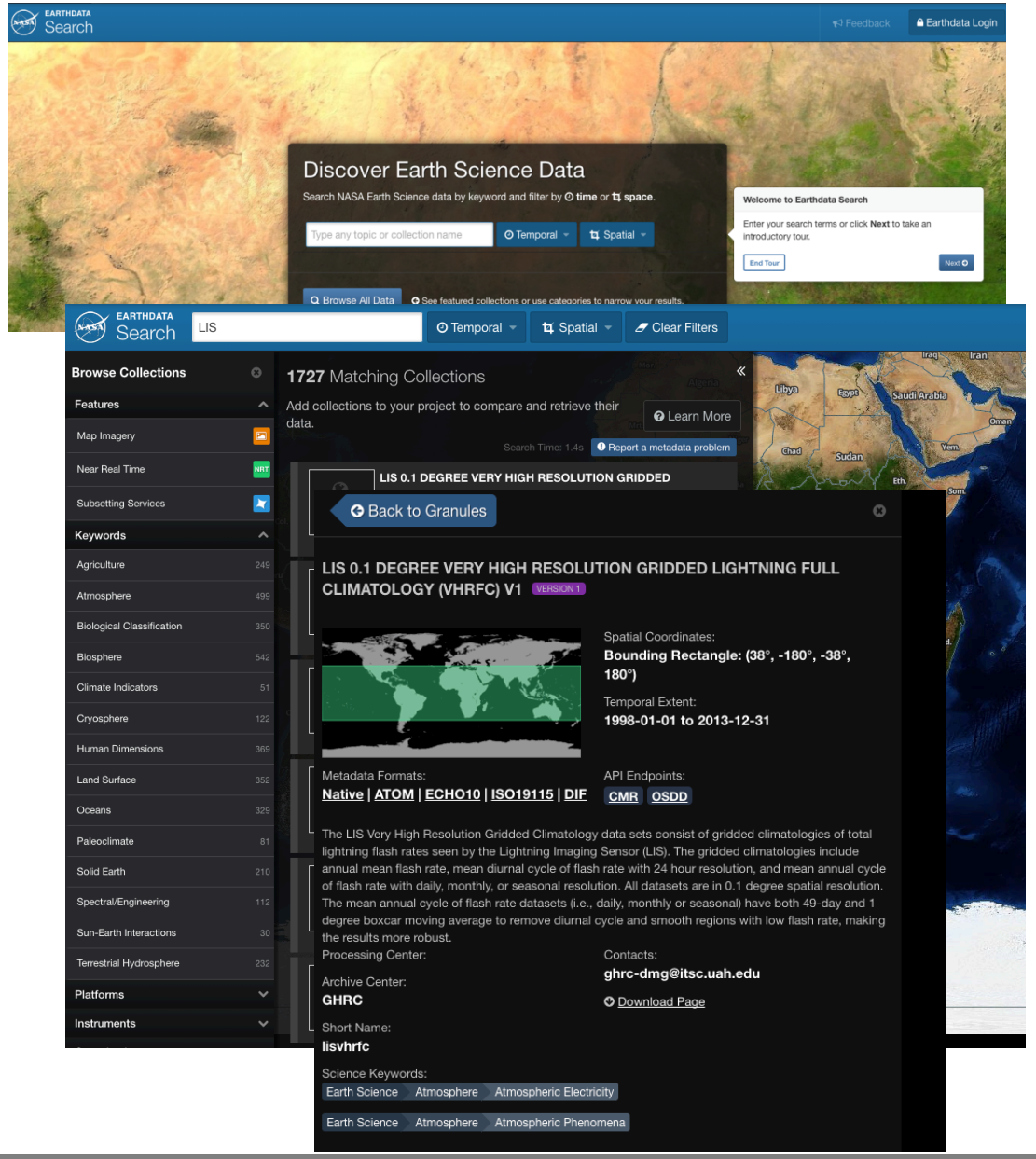
TOOLS EXPERTISE

DAACs: 2018 and beyond



Why Publish Your Data through GHRC

- You get a Data Citation
  - Publication credit for the data
  - Traceability for where and how your data are used
  - Links from the scientific articles to dataset information and download page
- Your data will be ingested, cataloged and archived using standards based engineering processes
- Your data will be accessible via NASA data systems
  - Also indexed by Google and other search engines



http://ghrc.nsstc.nasa.gov/hydro/

GHRC User Working Group Mandate

Primary objectives include but are not limited to:

- Assisting GHRC in **prioritization and pursuit of new data holdings** within the bounds of budget and ESDIS mission constraints
- Suggesting i**mprovements to enhance overall user experience** including discovery, access, and usability of data;
- Suggesting new **research and development ideas** relevant to GHRC to support product/tool prototyping and generation;
- Facilitating **communications with the general user community** and interested members of other communities.

THANK YOU!

Questions:

Are we moving in the right direction? At the right pace?

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